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PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to Vibration Generating Devices

I, CHARLES DE KEYSER, of 24, rue de l'Autonomie, Brussels, Belgium, of Belgian Nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a vibration generating device.

According to the present invention, a vibration generating device of the type employing an electric motor and at least one rotary axis having an eccentric weight, is characterised in that it comprises in combination, in a completely enclosing casing, an electric motor, at least one rotary axis having an eccentric weight, and between said motor and axis, a progressive clutch mechanism operated by centrifugal force.

The device is applicable to every appliance for the generation of vibrations with one single shaft or two parallel shafts of the Vibrogir type. This device permits the making of extremely compact appliances with the progressive motor action, which has a vacuum start. The advantages of such conditions of work in the electric motor art are known.

Loaded electric motors are known in which the eccentric masses are directly provided on the shaft of the motor. Such devices are excluded from the present invention.

The novelty introduced by the present invention is due to the fact that the eccentric masses are, in whole or in part not connected with the shaft itself of the electric motor, at least during the starting phase.

Embodiments of the invention will now be described, by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a diagrammatic sectional view of the essential elements of the invention;

Figure 2 is a longitudinal section of the vibrating device according to the invention;

Figure 3 is a section on the line III—III of Figure 2;

Figure 4 is a view in elevation of the adjustable eccentric loading device;

Figure 5 is a section on the line V—V of Figure 4.

According to the layout of Figure 1, it will be noted, that in principal, the electric motor A is independent of the loaded rotating system B. These two essential parts of the appliance are only connected and synchronised in their movements at the electric motor's service speed. Substantially, the shaft 1 of the electric motor carries at least one plate 2 in the periphery of which are hollowed out the housings 3, in which the pistons or shoes 4 are slidable. The latter abut the rim of the plate 5 which carries at least one eccentric mass 6. The shaft 7 of this loaded rotating system is located in the extension of the shaft 1 of the electric motor. Preferably, the pistons 4 are urged towards the rim 5 by means of springs 8. The shaft 1, of the electric motor carries the coils of the rotor 9, while th estator 10 is supported on the casing 11 of the device by means of resilient bearings. In rest position, therefore, the electric motor and the eccentric rotating system are independent of each other. They will be progressively connected by the rotation of the electric motor, the pistons 4, engaging progressively the loaded rim 5—6.

In Figures 2 and 3 the shaft 1 of the rotor, in this case is hollow and is supported on the roller bearings 13—14. This hollow shaft carries coils 9, capable of turning in the coils 10 of the stator. The latter is supported on an interior gearbox 15, which, itself, is concentric to the general exterior gearbox 11, of the device, on which it is supported through

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the medium of resilient rings 16, 17. At one of its ends, the hollow shaft 1 of the rotor carries keyed to it the plate 2, presenting the series of housings 3 in which slide the shoes 4, radially urged by the springs 8. These shoes abut the rim 5 of the loaded plate 6. The latter is keyed on the shaft 7 which traverses the appliance from part to part passing through the hollow shaft of the rotor. At its other end there is likewise keyed a second loaded plate 6^1, generally similar and symmetrical to the first. The end of the shaft 7 is extended beyond this loaded plate 6^1, in order to permit the immobilisation of the shaft 7 for the regulation of the vibratory force. This adjustment is obtained by the displacement of the movable loaded part 18 relative to the fixed loaded part constituted by the loaded discs 6 and 6^1 (Figures 4 and 5). When these two loaded parts are in opposition there is obtained the minimum force of vibration, and when they are in juxtaposition there is obtained the maximum force of vibration. A series of intermediary positions is obtained by the spurs 19 and a series of holes in the movable loaded part. The gearbox is completely watertight, so that it may be placed under water without any damage to its internal organs.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A vibration generating device of the type employing an electric motor and at least one rotary axis having an eccentric weight, characterised in that it comprises in combination, in a completely enclosing casing, an electric motor, at least one rotary axis having an eccentric weight, and between said motor and axis, a progressive clutch mechanism operated by centrifugal force.

2. A vibration generating device according to claim 1, in which, when at rest, the loaded rotating system is independent of the electric motor.

3. A vibration generating device according to claim 1 or 2, in which the electric motor progressively drives the loaded system, so that when it attains its service speed, the loaded system is driven without slip.

4. A vibration generating device according to claim 1, 2 or 3, in which the electric motor and the loaded rotating system are housed in a water-tight casing, of which the function is to transmit the vibrations engendered.

5. A vibration generating device according to any preceding claim, characterised in that the rotor of the motor is mounted on a hollow shaft traversed by the shaft of the loaded rotating system.

6. A vibration generating device substantially as hereinbefore described with reference to the accompanying drawing.

Dated this 29th day of December, 1947.

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1 SHEET

COMPLETE SPECIFICATION

This drawing is a reproduction of the Original on a reduced scale.

Fig. 1

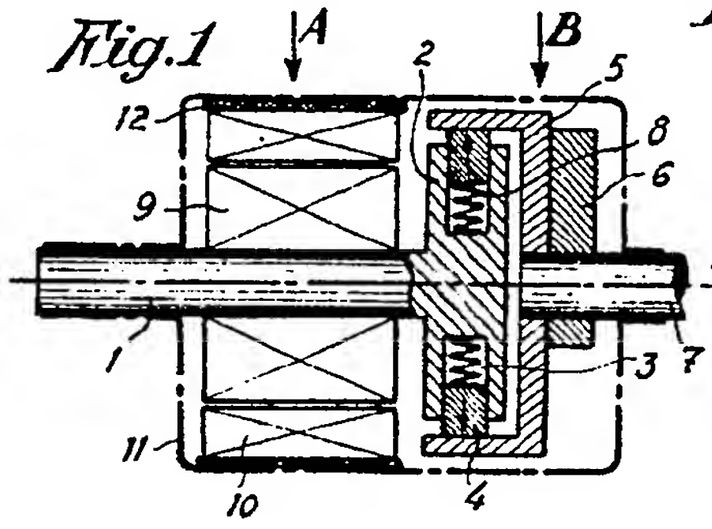


Fig. 3

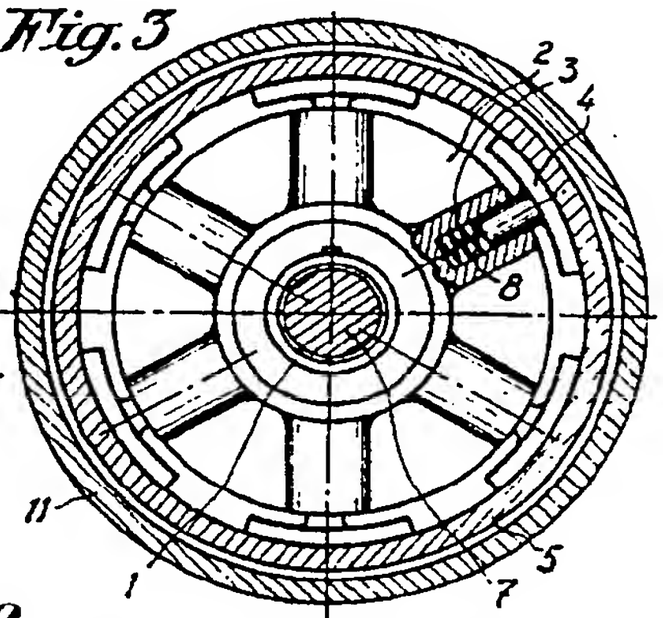


Fig. 2

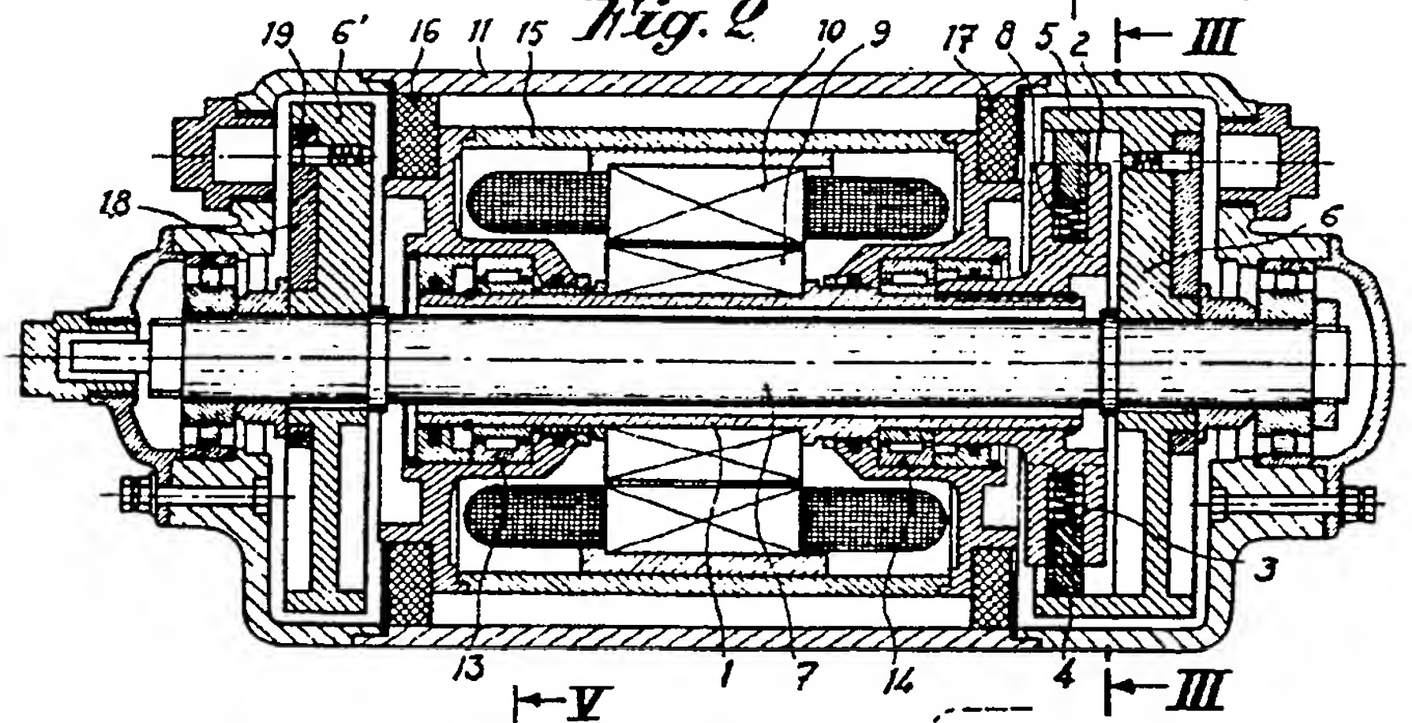


Fig. 4

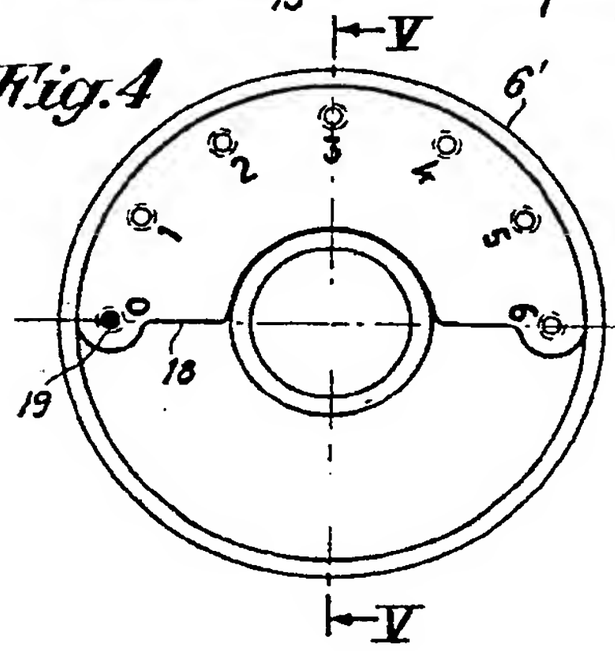
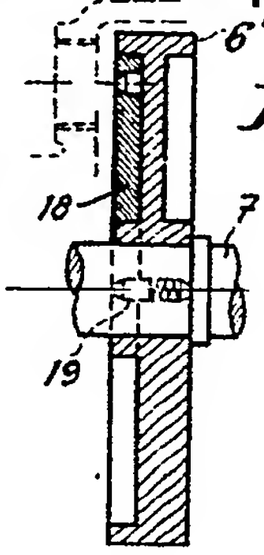


Fig. 5



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